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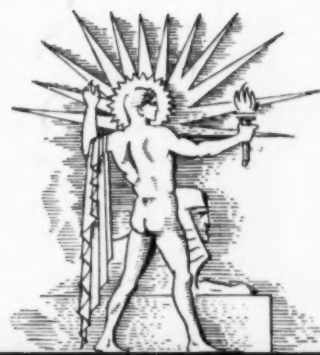
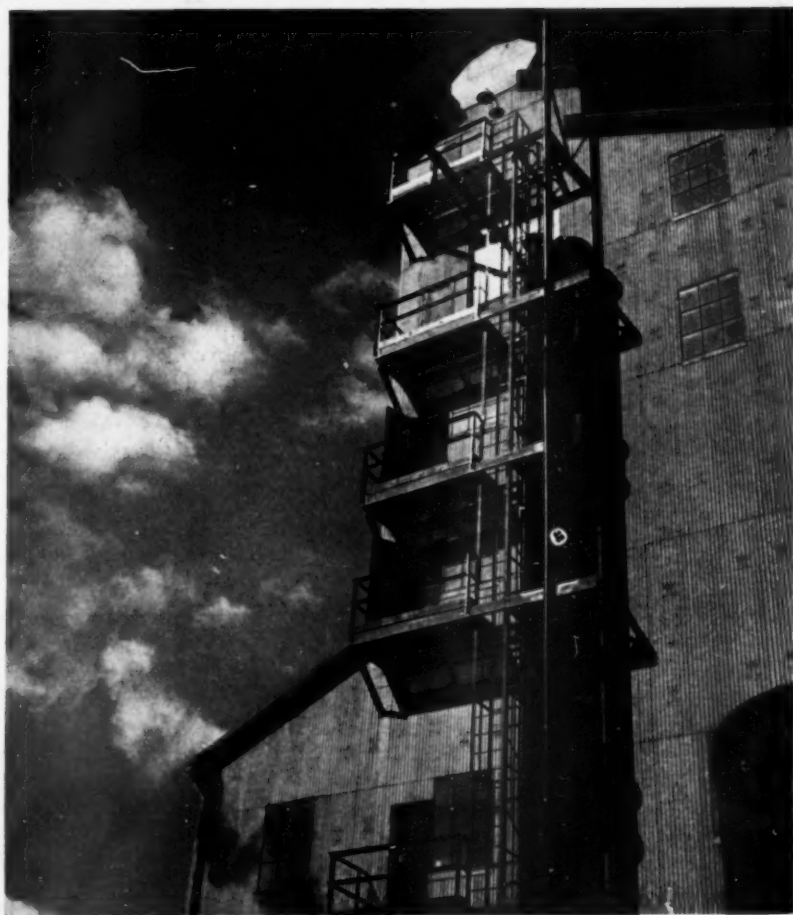
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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



November 2, 1940

Made in America

See Page 282

A SCIENCE SERVICE PUBLICATION

Do You Know?

A baby is born every 13 seconds, according to United States population figures.

Natural enemies keep the Japanese beetle from being a serious economic pest in Japan.

Furniture designed to "fit" persons five feet, eight inches tall is reported comfortable for the majority.

Fresh apple cider has the best flavor if made from juice of at least two varieties of apples, some experiment stations find.

A neon sign 35 feet long, on top of a factory at Chicago, is the first electric advertisement made for airplane travelers only.

Italy's North African colony of Libya is described by a geographer as no more dependable a granary than our Dust Bowl.

Before four zones of Standard Time were adopted in 1883, there were more than 50 kinds of time in the United States.

Britain reports that since July it has imported thousands of tons of magnesite from Greece, for use in munitions making.

The Suez Canal route shortens the distance from Bombay to Liverpool by 42%, as compared with the voyage around the Cape of Good Hope.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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Rain water near the ocean may contain traces of iodine.

An armadillo mother always gives birth to four babies, all of the same sex.

SCIENCE NEWS LETTER

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GENERAL SCIENCE

Ultraviolet Barrages Urged As Means of Preventing Flu

National Academy of Sciences Learns That Army
May Be Protected From Epidemics By Lamps in Barracks

ULTRAVIOLET barrages from mercury vapor lamps, sweeping the air of barrack rooms, mess halls and other places where soldiers of the new American army will be crowded together during the coming winter, were suggested as a means of minimizing epidemics of influenza, pneumonia, measles, mumps and other plagues that scourged the army camps of 1917-18, by Dr. William F. Wells of the University of Pennsylvania, before the National Academy of Sciences meeting at the University of Pennsylvania.

Dr. Wells feels that it is highly likely that many of the so-called infectious diseases are air-borne, and that their germs or viruses can be kept down by flooding spaces where they float with ultraviolet radiation of germicidal wavelengths. In keeping with this theory, he has tested various types of ultraviolet installations, first in hospitals, more recently in schools. Results have been decidedly encouraging.

He and his associates are engaging in further careful tests of the method in new environments. They intend to pursue their theory to scientific proof. They believe however that enough is now known to warrant the recommendation that ultraviolet radiation apparatus be installed in buildings designed to house large companies of men. The bearing of this recommendation upon the coming national situation is obvious.

Science News Letter, November 2, 1940

Why TB "Runs in Families"

AN ANSWER to the riddle of why tuberculosis seems to "run in families" was sought by Dr. Max B. Lurie of the University of Pennsylvania, who told the Academy of his results.

Dr. Lurie produced six closely inbred families of rabbits by several generations of brother-sister matings. Two of these families were highly susceptible to tuberculosis, one was highly resistant, and the remaining three were intermediate.

When the rabbits were infected with TB germs, it was found that resistance centered largely at the port of entry. The

disease was confined to the lungs in the resistant family, and made but slow progress even there. In animals belonging to the susceptible families, however, it readily spread from the lungs to other tissues, traveling by the circulatory system.

Further experiments showed the resistant rabbits to be strongly allergic to dead tuberculosis bacteria and their products, whereas the susceptible animals were quite tolerant and gave little allergic reaction.

Science News Letter, November 2, 1940

Dance of Life in Protoplasm

LIFE as a dance, a rhythmic to-and-fro motion of protoplasm, was demonstrated in a series of striking motion picture films shown before the meeting of the National Academy of Sciences, by Prof. William Seifriz and Noburo Kamiya of the University of Pennsylvania. Not only the time of the rhythm, but the force with which it moves the fluid stuff of life, have been measured by the two researchers.

The organism studied by Prof. Seifriz and Mr. Kamiya is one of the lowliest of living things, known as a slime-mold. Slime molds are so far down on the evolutionary scale that biologists are not agreed whether they are plants or animals. To the naked eye, they look rather like bits of egg white, or blobs of spilled mucilage. Nevertheless, they are alive, and the naked protoplasmic masses of which they are composed are in slow but ceaseless streaming motion.

Prof. Seifriz and Mr. Kamiya have succeeded in making motion pictures of this protoplasmic streaming, speeding up the apparent motion by exposing frames of their film at longer than normal intervals, and then running the film at normal speed—what is known as the time-lapse method, which is the reverse of a slow-motion picture. The speeding up has shown many things about the streaming of protoplasm that have not been known before.

Basic is the rhythmic ebb and flow of the life-tides in the (*Turn to page 282*)



POWER BY RADIO

Transmission of power by radio has been successfully accomplished with this tube in a demonstration by Westinghouse scientists. It is shown with I. M. Mouromtseff, one of the engineers who developed it.

RADIO

Power Is Sent By Radio With New "Klystron Tube"

A FORWARD step on the road to radio transmission of power was demonstrated to a group of college deans and professors attending a conference at the Westinghouse Lamp Research Laboratories. As they sat in the conference auditorium, each member of the audience held aloft a flashlight bulb to which was attached a short wire antenna. On the platform was the transmitter from which the electrical waves, focussed like a searchlight beam with the help of a six foot horn, were aimed at the little lamps, causing them to light as though connected to a storage battery.

The waves carrying the energy are from four to 16 inches long, much less than the ordinary short radio waves, which are 10 to 300 yards in length. Unlike the radio waves, they cannot penetrate non-metallic materials. This was demonstrated by holding a block of wood between the lamp and the transmitter. Then the lamp went out.

The apparatus, called the Klystron, originated about two years ago in the laboratories of Stanford University, in California. The Sperry Gyroscope Company was designated by the University to promote the practical use of the instru-

ment, and the researches in the Westinghouse laboratories have been carried out by arrangement with them. I. M. Mouromtseff and G. M. Dinnick, as well as other Westinghouse engineers, have been working on the problem, and have produced it as a much smaller and simpler tube which is now air cooled.

Heart of the device is two small doughnut-shaped copper tanks, called "rhumatron" because of the rhythmic surging of the radio waves within their walls. These were devised by William W. Hansen, Stanford University physicist, who discovered their properties in the course of atom-smashing experiments. The rhumatrons break up an

electron stream, bunching the individual electrons and converting their energy into the high-frequency oscillations, which are transmitted from the Klystron antenna. Even in this stage of development, the professors were told, a power of 200 to 500 watts is attained, comparable to many a radio station.

Though power transmission may come eventually with the Klystron, engineers think that more immediate applications will be in increasing the number of television transmission channels, or the number of messages transmitted simultaneously over a telephone line; producing body heat internally for medical purposes and in improved aerial navigation.

Science News Letter, November 2, 1940

MEDICINE

Nerve-Cutting Operation Cures Meniere's Disease

Record of 400 Permanent Cures and Only One Death Out of 401 Cases Reported to College of Surgeons

A RECORD of 401 operations for Ménière's disease, with one death and 400 permanent cures, was announced by Dr. Walter E. Dandy, of Johns Hopkins Hospital, at the meeting of the American College of Surgeons in Chicago.

Patients with this ailment have sudden, recurrent and usually incapacitating attacks of dizziness in which objects rotate. Ringing in the ear and partial deafness on the affected side and frequently nausea and vomiting accompany these attacks. The deafness and ear symptoms may occur on both sides.

Permanent cure of the condition is achieved, with almost no risk and no after effects, by cutting the nerve of hearing on the affected side, or on both sides, if the ear symptoms occur on both sides. If the hearing is worth saving, it may be preserved by cutting only three-quarters of the way through the nerve. The operation can be done almost painlessly under a local anesthetic, but Dr. Dandy prefers to put the patient to sleep with avertin.

Science News Letter, November 2, 1940

New Chemical Treatment

A NEW chemical treatment of Ménière's disease, which has been on trial for just over a year, was reported

by Dr. Bayard T. Horton, of Mayo Clinic. This treatment consists of injections of histamine and its usefulness in relieving Ménière's disease was discovered when Dr. Horton used it to treat a patient who had peculiar, one-sided headaches. The histamine treatment was given for the headaches, but to the patient's elation, she not only got over her headaches but seemed to be entirely relieved of Ménière's disease from which she had also suffered for more than four years.

Following this experience, Dr. Horton started treating other Ménière's disease sufferers with histamine. To date, 49 patients have been given this treatment. All of them were promptly relieved of the dizziness, nausea and vomiting, and less than half obtained improvement of the ringing in the ear. This is the most difficult phase of Ménière's disease to treat, Dr. Horton pointed out.

The acute symptoms of the disease, Dr. Horton and associates are convinced, can be relieved by injecting histamine into the patient's veins from one to four times on successive days. For prevention of future attacks, histamine in adequate dosage is injected under the skin two to three times a week. A few patients who have been on this schedule for a period of six to nine months have remained free from attacks.

"It will take additional time," Dr. Horton stated, "to evaluate this particular phase of histamine therapy."

"The perfect treatment for Ménière's disease has not been announced nor will it be announced here tonight," he declared at the beginning of his report. "The story which I have to relate regarding its treatment with histamine is a very simple one and can best be told as it actually happened. I am not here to defend this method of treatment. It will survive or fall on its own merits."

Science News Letter, November 2, 1940

Urges Sympathy for Draftees

DO NOT follow the hard-boiled drill sergeant's methods of handling recruits and draftees. Be firm but kind and show a little sympathy to the new soldier.

This is the advice Brigadier General Raymond F. Metcalfe, Medical Department, U. S. Army, gave to members of the American College of Surgeons, many of whom will soon be medical officers assigned to duty with America's new defense army.

"Remember, the medical officer and the chaplain are the only officers who can show a little sympathy for the new soldier without lowering discipline," General Metcalfe stated.

Many of the men coming to the doctor's office at the dispensary or hospital will be not seriously ill, but tired, homesick and suffering disturbed body functions as a result of the complete change in habits required by Army life.

If there is any doubt of illness, the man should be sent to quarters or the hospital at once rather than waiting until he becomes seriously ill, General Metcalfe said, warning that measles may be the first serious condition developing among the recruits and draftees, and may be followed by pneumonia and empyema. Prompt isolation of the measles patient may stop this disabling sequence.

Sodium amytal, familiar to many civilians as a sleeping medicine, should be given to every seriously wounded soldier picked up by Battalion Surgeons and hospital corps men before the wounded man is sent to the rear, General Metcalfe advised in outlining plans for handling the wounded if we should get into war.

Many lives may be saved by this measure, he said, because sodium amytal has been found to delay for 10 hours or longer the onset of shock which is a grave danger in battle wounds.

Science News Letter, November 2, 1940

Delay Sewing War Wounds

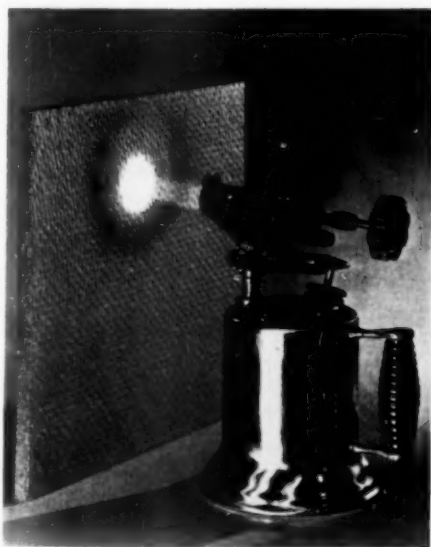
WAR WOUNDS in which the skin and tissues are badly torn should not be immediately sewed up, Dr. Fred-eric W. Bancroft, of Columbia University College of Physicians and Surgeons, warned fellow surgeons.

French army surgeons after experience in the present war all warn of the dangers of primary suture—that is, sewing up the wound the first time the surgeon sees it—in war wounds.

The ideal conditions of a healthy patient, clean skin, wound made by a relatively sharp and clean instrument, repair of the wound within six hours after it was inflicted, and opportunity for the surgeon to use meticulous care in treating the wound and to watch it during the time it is healing, are hardly likely to be found in war surgery. But unless these conditions are present, Dr. Bancroft advises against primary suture of wounds.

Science News Letter, November 2, 1940

There are 18,000 kinds of jobs, but only one young person in four leaving school or college is properly prepared for work or has any clear idea of what job he should seek, says the American Youth Commission of the American Council on Education.



WON'T BURN

Non-inflammable lath board is now on the market. (Fir-Tex Insulating Board Co.) It is made of minute flakes of a non-metallic mineral which originates in mica. These are interlaced with wood fibers so that there are millions of microscopic firewalls in each panel. A partition so constructed was tested and prevented the spread of fire from one room to another for more than an hour.

NUTRITION

U. S. Army May Eat Bread Enriched With Morale Vitamin

American Soldiers Will Continue To Be Best Fed Fighting Men; Study Enrichment of Several Foods

FEEDING soldiers of the U. S. Army bread fortified by the morale-building B vitamins, which would make them better fighters, is being considered by the Quartermaster Corps.

"American soldiers are, and will continue to be, the best fed fighting men on earth," Major Paul Logan, food expert of the Army Industrial College, assured the American Dietetic Association, meeting in New York.

Plans and experiments under way, he said, are aimed toward assuring a balanced diet to American soldiers, in peace or fighting conditions. Strain on body and nerves which modern warfare causes with its lightning speed, whirlwind devastation, and nerve-shattering machines, Major Logan said, means that an army must be fed not only enough food but all the constituents of a properly balanced diet.

"Considerable attention is now being given," he stated, "to the possibilities of enriching certain foods—such as cereals—with vitamins, particularly those of the B complex, and also with certain minerals."

Dehydrated foods are also undergoing tests. These require little space and therefore would help the Quartermaster Corps in its continual battle to ship as much food in as little space as possible.

Soldiers recently ate, and praised, a test dinner prepared entirely from dehydrated foods except for the meat and gravy, Major Logan reported. The menu, he said, included cream of tomato soup, roast beef with brown gravy, mashed potatoes, creamed carrots, cole slaw, cranberry jelly, apple and pumpkin pie.

A pound of cranberry flakes "gross weight," expands to serve 109 soldiers, whereas a pound of canned cranberry jelly represents only six and one-half servings.

While food value of the dehydrated preparations is apparently equal to that of canned foods, the army food specialist said that tests are now being conducted by the Nutrition Committee of the National Research Council to obtain accurate information as to the vitamin and

mineral values which the dried foods contain.

This nutrition committee, headed by Dr. Russell Wilder, is studying problems of vitamins and mineral sufficiency in the military diet in collaboration with the Surgeon General and the Quartermaster Corps of the Army.

Science News Letter, November 2, 1940

Americans Lack Vitamin B

THE AVERAGE American consumes too little vitamin B for grade A health, Dr. Norman Jolliffe, of the New York University College of Medicine, warned dietitians.

This vitamin, which has proved so complicated that it is now technically called the vitamin B complex, is known to contain at least 12 fractions, Dr. Jolliffe pointed out, addressing the American Dietetic Association. Five of the fractions are available in crystalline form for clinical use.

Lack of this vitamin, which occurs in such foods as milk and eggs, whole grains, liver, and some other meats and fresh vegetables, is held responsible for a variety of ills, including some cases of neurasthenia, pellagra, an eye malady, and a nervous disease which until recently was 100% fatal.

Dr. Jolliffe advised nutritionists to look out for vitamin B deficiency in diet of the following:

1. Low income and poverty stricken groups.
2. Persons with bad dietary habits and food idiosyncrasies.
3. Alcoholic addicts.
4. Patients with diseases which alter the requirements of this vitamin.

Vigorous use of nicotinic acid, one factor in vitamin B, has spectacularly reduced mortality from 100% to 15% in the nervous disease known as encephalopathy, which is now known to be caused by acute lack of this food factor.

While not all neurasthenia is caused by too little thiamin—another fraction of vitamin B—in diet, Dr. Jolliffe stated that lack of this vitamin plays a larger

role in the nerve malady than is commonly believed. As common neurasthenic symptoms of too little thiamin, he cited poor appetite, fatigue, insomnia, and often with them irritability, nausea, depression, constipation, headache, back-

ache, "gas" and palpitation of the heart.

Patients with paralysis agitans treated with still another part of the B vitamin, known as pyridoxin, have shown definite improvement, he reported.

Science News Letter, November 2, 1940

PSYCHOLOGY—PHYSIOLOGY

Air Raid Noise Not Likely To Harm Nervous System Cells

By DR. CLIFFORD T. MORGAN
Harvard University

This authoritative article was prepared especially for Science Service. Dr. Morgan has been studying intensively the possible effects on the nervous system of loud noises like those of explosions or the screaming bombs which have dropped on London. He recently reported to the American Psychological Association experiments in which rats were driven into epileptic seizures by the blast of a compressed air whistle set at such a high pitch that it was inaudible except for the whistling noise of the air.

IT IS unlikely that any real damage is done to the nervous system by prolonged auditory stimulation such as that to which the Londoner is exposed.

We get damage in the brain of rats only when the sound stimulation has resulted in an epileptic seizure, but this is probably due to the rupture of blood vessels in the seizure.

Such seizures seem to be peculiar to the rat and certain other infrahuman animals.

Aside from such seizures, high pitched sounds or sudden loud noises of guns produce in normal animals violent emotional responses which look like terror and which soon become associated with almost any noise so that animals which are exposed for a long time to such

sounds become extremely jumpy and may be greatly disturbed emotionally by the slightest sound.

I should expect that a good number of Londoners will be affected in this way just as were soldiers in trenches during the last war. The Germans probably got the idea of the screaming bombs from the war neuroses of this sort which were numerous in the last war.

The effect may be greatly enhanced where there are additional conditions making for terror, and it may be reduced when a satisfactory adjustment has been made to non-auditory factors in a situation.

There is evidence to support this statement in rat experiments. The jumpiness produced by sound lasts for a considerable time in some cases. It quickly disappears in other animals, especially if they are given good treatment. Such more or less permanent effects of sound exposures are without doubt associated with functional changes in the nervous system but it is extremely doubtful that any material damage is done to nerve cells.

Prolonged very intense sounds may damage the ear but I do not know whether in the case of the Londoner the sound is intense and continuous enough to do this to a significant extent.

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PSYCHOLOGY—PHYSIOLOGY

Endurance of Loss of Sleep Tribute to Londoners' Stamina

LONDONERS could not endure the interference with sleep brought by nightly air raids and still go on with their work if they did not have splendid physical stamina and mental stability.

This is the opinion of Dr. W. A. Bousfield, of the University of Connecticut,

a psychologist who has for years been studying the effects of loss of sleep and poor sleep on morale.

"Interference with sleep suffered by Londoners in districts subject to nightly bombing must inevitably produce a chronic condition of sleep hunger with

an attendant depression of mood," he said.

Experiments by Dr. Bousfield have revealed that not only quantity of sleep but also quality, regularity and continuousness are related closely to the individual's sense of well being. Interference with any one of these is sufficient to alter mood noticeably and to induce feelings of tension.

"The Londoner," he said, "allowed only short naps in an air raid shelter, loses out on all factors conducive to the full benefits of sleep.

"It requires greater effort for him to concentrate, and muscular exertion becomes more difficult.

"Only by virtue of strong motivation and emotional zeal is it possible to maintain the increased effort necessary to counteract this loss in efficiency. Many individuals respond to such a state with a compensatory hilarity, thus making the difficult situation easier to tolerate.

"That the British have been able to endure prolonged interference with their sleep is a high tribute to their physical stamina and their inherent stability."

Science News Letter, November 2, 1940

PALEONTOLOGY

Nearly Complete Fossil Of Uintatherium Found

PRIZE fossil find of the season, a nearly complete skeleton of the elephant-sized six-horned beast known as Uintatherium, that dominated the primitive forests about 30 million years ago, has been dug up in southern Wyoming by Dr. Charles L. Gazin, Smithsonian Institution paleontologist.

Bones of this strange giant mammal are common enough, but a skeleton with only a few parts missing is one of the greatest of scientific rarities. Dr. Gazin's find lacks only one hind leg, part of a foreleg, and the neck vertebrae. The yard-long skull is in exceptionally good condition, although the lower jaw is considerably crushed. There is also a second skull, including one of the beast's saber-like down-pointed tusks about a foot long.

"We were fortunate in the location of our specimen," Dr. Gazin informed Science Service. "It was in the side of a steep hill only about a quarter of a mile from a road. We ran a truck from the road up a dry creek bed right to the foot of the hill, and dragged the bones down to it on canvas. As finally boxed up and shipped to Washington, the bones filled four 500-pound cases."



UINTATHERES

This restoration painting, made by Charles R. Knight for the Field Museum of Natural History, gives an idea of what these monstrous, lumpy-headed beasts must have looked like.

The skeleton is expected to become one of the prize exhibits in the U. S. National Museum, after it has been worked free from the matrix of hardened clay in which it is embedded, and properly mounted up. This work may require as much as a year.

Uintatheres probably dominated the woods of the West in mid-eocene time, approximately 30 million years ago, as elephants dominate the forests of India today. They were nearly as large as elephants, although their general outlines more nearly resembled those of a giant rhinoceros. However, they were not at all closely related to either, or to any other animal now in existence. Their whole line passed suddenly out of existence, many millions of years ago—no one knows why.

Science News Letter, November 2, 1940

PHOTOGRAPHY—PHYSIOLOGY

You Can Use Your Eye For Photo Exposure Meter

THE PUPIL of the eye becomes a photographic exposure meter with the aid of a small mirror on which are a series of black spots. (*Monner Meter Co., Rapid City, S. D.*) These correspond to different intensities of light, and different exposures.

Science News Letter, November 2, 1940

In "bleeding tooth" shells, what resembles baby teeth are really part of the hinge for the trap door.

METALLURGY

Speed Laws for Metals Measured by New Device

Testing Machine Provides Data on Creeping Qualities Of Steels and Alloys Subjected to Heavy Loads

"SPEED LAWS," concerning the extent to which metals will stretch under heavy loads in machinery over a period of years, can now be determined in tests requiring from 15 minutes to a few days. The testing machine used in these measurements was described by Dr. A. Nadai, consulting engineer of the Westinghouse Electric and Manufacturing Company's research laboratories at East Pittsburgh, Pa. He spoke before the meeting of the Society of Rheology in New York. This is the branch of physical science which deals with the deformation and flow of matter, a subject important in many phases of science and engineering.

In building steam turbines, for instance, parts which are subjected to ten years of service at a temperature of 1,000 degrees Fahrenheit must not stretch more than a tenth of one per cent during that time. Formerly, to test materials for these parts, three to six months were required.

"This new testing machine," explained Dr. Nadai, "will permit engineers quickly to assemble a vast library of intimate data on the creeping properties of a variety of steels and other metals and alloys, so that the designer may select the exact metal that will stand up under the service to be expected of it."

In a typical test with the device, a half-inch-diameter cast carbon-steel bar was subjected to a pull which was gradually increased to about six tons. All the time, an electric furnace around the specimen kept the temperature at 850 degrees Fahrenheit. In four minutes the bar stretched about a tenth of its length. With a pull of only four and one-half tons, four days were required for the same stretch. Dr. Nadai finds that the difference in speed between the slow-moving turbine parts and the relatively rapid deformation of the steel plates in a rolling mill is about one quadrillion (1,000,000,000,000,000) to one.

Since it is known that large rock masses in the outer layers of the earth's crust change shape by creeping, Dr.

Nadai suggested that these same laws may apply in geology as well.

Science News Letter, November 2, 1940

Machine Studies Relaxation

AT ANOTHER session of the meeting, W. E. Trumpler, also a Westinghouse engineer, told of tests to determine what happens when steel parts are held rigidly in a strained position while they relax. Examples of such parts are the bolts holding gasoline engines together. Another machine simulates such conditions.

A test piece, the size of a lead pencil, is pulled with a force of three and one-half tons while heated to 1,000 degrees or more. As it starts to stretch, the machine automatically prevents any change, by reducing the pulling force. Thus the test may continue for a week, the force being lessened enough to restore the original length with every stretch of a few millionths of an inch. A graph, drawn on a sheet of paper, gives a record of the relaxation. By such tests, said Mr. Trumpler, "we shall know just how large a bolt must be used, and how firmly it must be tightened to prevent loosening during years of service."

Science News Letter, November 2, 1940

ARCHAEOLOGY

Pre-Christian Era Village Just Found in Canada

DISCOVERY of a prehistoric village in Canada, apparently inhabited by Indians centuries before the dawn of the Christian era, is reported by Dr. Emerson F. Greenman, archaeologist. Dr. Greenman has been leading a University of Michigan exploring expedition in the Georgian Bay region of Lake Huron.

Implements of quartzite revealed the presence of aboriginal settlement. Evidence of antiquity is the fact that what was then a beach is now high and dry, 297 feet above water. Before an accurate date of the village's life can be determined, the region must be studied by geologists, Dr. Greenman stated.

Science News Letter, November 2, 1940

AGRICULTURE

Acorns, Horse Chestnuts Feedstuffs in Britain

GATHER acorns, horse chestnuts and beechnuts to eke out the feedstuff supply for farm animals and thereby release tonnage for other needed imports, is (*Nature*, Sept. 21) the suggestion of Dr. R. Melville of the Royal Botanic Gardens at Kew, near London. Both oaks and horse chestnut trees have borne bumper crops this year, and in the present national emergency they should not be permitted to go to waste, Dr. Melville points out.

Horse chestnuts are slightly bitter, but most farm animals soon come to like them, the botanist reports. Only pigs persistently refuse them. They can be fed "as is," but it is considered best to gather them in central depots where they can be dried and ground.

Acorns can be stored in underground pits, where they will keep very well for a long time, if they are not permitted to get wet. They can be fed fresh or dried, but it is not recommended that they be given to young animals, which are sometimes poisoned by them.

Science News Letter, November 2, 1940

CHEMISTRY

Fluorescent Plastic Tees Are Easy To Find Again

GOLF TEES, made of a cellulose acetate plastic, now are molded with a yellow fluorescent pigment. The invisible ultraviolet rays of the sunlight cause this to glow brilliantly, making the tee easy to find after it is used. (*American Molded Products Co., Chicago*)

Science News Letter, November 2, 1940

PHYSIOLOGY

Twins Face Unusual Hazards Before and After Birth

ARE twins desirable? If you happen to be hoping—or fearing—that the next addition to your family will be twins, triplets, or a larger number of babies, you will be interested in the answer to this question given by Dr. H. H. Newman, of the University of Chicago in a new book, *Multiple Human Births* (Doubleday, Doran).

Mothers want twins and frequently ask how they might go about it to have twins. A remarkable number of people are interested in twins. A fine pair of twins is usually the focus of family affection.

But nevertheless, Dr. Newman says, biologically speaking, twins are not desirable.

Among animals in general, the more primitive method of reproduction is the wasteful one of producing an enormous number of young and letting them shift for themselves without parental care. Only a few live to grow up and have young of their own.

The more modern and more effective way is to produce only a few or one offspring and take the utmost care of them or it.

Man has specialized for the production of but one baby at a time. For this reason, twins face hazards to which a single baby is not exposed. Most of these dangers must be faced before birth.

No one knows, Dr. Newman says, what proportion of the twins who start life ever succeed in being born, but estimates range from 20% to 50%.

Lack of room is likely to force the babies into positions in the mother's body that make birth hazardous.

Premature birth is extremely prevalent among twins and almost universal among triplets. And the baby born before its time is very delicate and easily injured. Especially vulnerable is the brain, for the skull is less completely ossified and is a less efficient protection.

Even after they have safely arrived in the world, twins are not free from special dangers, for not more than half of twins born prematurely live to reach school age.

A peculiar hazard is the lot of identical twins, those who develop from a single egg cell, for these babies before birth must share the same arrangement for blood supply. One twin, in these circumstances, may get more than his share of the blood. The other suffers as a result and may even have his heart stop.

So twins who live to go to school and finally grow up have lived through many dangers. They are a picked lot and are to be congratulated.

But maybe the mother will give up her idea about wanting to be sure to have twins.

Science News Letter, November 2, 1940

INVENTION

Ice Cream Cones Can Be Filled Down to Tip

ICE CREAM cones can now be filled clear down to the point with a new filler recently introduced. (*Feller Cone Scoop Co.*) It is a scoop, which is dipped into the ice cream, and the cream comes out as a cone, point downwards.

Science News Letter, November 2, 1940

IN SCIENCE

INVENTION

Electric Coffee Maker Has Automatic Turnoff

AN electrically operated glass coffee maker has an automatic switch which operates when all the water has passed to the upper bowl. (*General Electric*) The current is then reduced so that merely enough heat is applied to keep the coffee hot. Thus, one does not need to watch the device, but can start it and leave it if desired.

Science News Letter, November 2, 1940

GENERAL SCIENCE

British Science Committee Similar to Defense Group

ANNOUNCEMENT from London that the British government has formed a committee of prominent scientists to aid in defense brings attention to the parallel committee here. This is the National Defense Research Committee, established last June under the chairmanship of Dr. Vannevar Bush, president of the Carnegie Institution of Washington. But while the British committee was organized after more than a year of war, ours was created to help avoid war.

The six members of the British group are outstanding in their fields, and include two Nobel prize winners. One is Sir William Bragg, director of the Royal Institution and President of the Royal Society, who won the Nobel award in 1915 jointly with his son, W. L. Bragg, for their work on crystal analysis by X-rays. Another committeeman, Dr. A. V. Hill, physiologist, received the Nobel prize in medicine in 1922. He is Foulerton Research Professor of the Royal Society, as well as its secretary.

Other members are Dr. E. V. Appleton, secretary of the Privy Council for Scientific and Industrial Research, known for his work in radio and electricity; Sir Edward Mellanby, honorary physician to the King, an expert in nutrition; Sir Edwin Butler, secretary of the Agricultural Research Council; and Dr. A. C. G. Egerton, professor of chemical technology at the Imperial College of Science.

Science News Letter, November 2, 1940

NE FIELDS

CHEMISTRY

Iodine Losses From Salt Prevented By Coating

LOSSES of iodine from "iodized" table salt and from iodine-treated livestock feeds can be minimized through the use of finely ground calcium stearate, it has been discovered in the course of researches at the Mellon Institute of Industrial Research, by Frederick F. Johnson and Edward R. Frederick.

Calcium stearate is technically a soap, although no housewife would recognize it as such. In an impure form, it is the troublesome, insoluble scummy stuff that develops when ordinary soap is dissolved in very hard water. To chemists, any compound of a metal with a fatty acid is a soap, whether it will dissolve or not.

As a matter of fact, the very insolubility of calcium stearate is one of its advantages as a stabilizer of iodine in table salt and cattle feeds, because it covers the salt grains over with a nearly impermeable coating that prevents the valuable but volatile iodine from escaping.

One sample of iodized table salt treated with the calcium soap lost less than 1% of its iodine in four months of storage, while an untreated control sample lost 15%.

Science News Letter, November 2, 1940

ASTRONOMY

Cunningham Comet Will Be Brightest Since Halley's

CONCLUSIVE evidence that the new comet discovered recently by Leland S. Cunningham, of the Harvard College Observatory, will be the most conspicuous since 1910 is contained in his latest calculations of its path. (See *SNL*, Sept. 28) These have been made public by Dr. Harlow Shapley, director of the Harvard Observatory.

They show that in early January, the comet will be easily visible in the western sky for an hour or two after sunset, as it passes south of the bright star Altair in the constellation of Aquila, the eagle. At that time, it will be about as bright as Altair, and possibly even more bril-

liant, though it is somewhat uncertain just what brilliance it may attain.

Its distance from the earth, at the beginning of 1941, will be about 60,000,000 miles, and from the sun about 50,000,000 miles. It will be at its closest to the earth about Jan. 10, when some 54,000,000 miles away, and to the sun, with 33,000,000 miles, on Jan. 16. Between these dates it will be at its most brilliant. However it will then be so close to the sun as to be seen, if at all, only in the evening twilight. Consequently, it will not be as conspicuous as earlier, when it has a dark background. In the closing days of December, the moon, in a crescent phase, will pass to the left of the comet.

Though several comets in recent years were just barely visible when one knew where to look, this will be the first conspicuous naked eye comet since 1910. In that year there were two: Halley's, making one of its 75-year visits, and another which appeared earlier in the year, and was so bright that it was discovered independently in the southern hemisphere by a number of persons. Later it was visible in North America.

Science News Letter, November 2, 1940

ORNITHOLOGY

Smithsonian Receives Birds From Indo-China

FROM Indo-China, now menaced by the possibility of Japanese invasion, has come a large collection of birds, just received by the Smithsonian Institution. The birds were obtained by Dr. Joseph F. Rock, well-known American scientist-explorer, who has worked for many years in western China. When the war made conditions too difficult for further operations, he shifted his base into Indo-China.

In the new collection are many large birds, which earlier collectors did not like to handle, because of the difficulty of preparing and transporting large specimens through the wild country. Prize specimens are three giant ibis, a large gray wading bird.

The Smithsonian Institution has also received about 1,000 bird specimens from the state of Vera Cruz, Mexico, collected by M. A. Carriker, former associate curator of birds at the Philadelphia Academy of Natural Sciences. Under the auspices of the U. S. National Museum, Mr. Carriker continued the collecting work in this region started last winter by Dr. Alexander Wetmore, assistant secretary of the Smithsonian Institution.

Science News Letter, November 2, 1940

MEDICINE

American Hospitals Plan Care for Civilian Injuries

AMERICA'S hospitals are preparing for the double defense job of caring for casualties among both civilian population and fighting forces in the event of war.

Albany, N. Y., Hospital, for example, has, on the request of the Surgeon General of the Army, agreed to organize and sponsor U. S. Army General Hospital No. 33, its director, Everett W. Jones, announced at the hospital standardization conference of the American College of Surgeons.

This means getting ready a staff of 42 physicians and surgeons, a chief nurse and possibly other nurses, X-ray, laboratory and other technicians to serve the 1,000-bed General Hospital. At the same time, understudies must be trained to take over at any time the duties of the men and women who will staff the Army hospital, so that the hospital at Albany can continue to care for civilian patients.

In the event of war such as is being waged in Europe now, civilian hospitals will have to care for many war casualties. They should prepare now for such an emergency, Mr. Jones said, by starting to train extra laboratory and X-ray technicians and nurses and by giving refresher courses to graduate nurses who have not been nursing for some years but who may be called in emergency.

Expansion of the hospitals to care for war casualties must also be planned. By evacuating tuberculosis patients to state hospitals and converting to hospital wards several floors of the nurses' home and the outpatient clinics, Mr. Jones said, the Albany Hospital is ready if necessary to expand from its normal capacity of 600 beds and 50 bassinets to 837 beds.

Science News Letter, November 2, 1940

RADIO

"Translator" Will Convert Your Old Radio To FM

WHEN frequency modulation radio comes into extensive use, it will not be necessary to scrap your old radio set to take advantage of the new static-free reception.

A "translator" has been introduced which can be connected to any good receiver of the older type. (*General Electric*) It is 9 inches high, 15½ inches wide and 8 inches deep. A shielded cable is used to connect it to the old receiver.

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CHEMISTRY

Phenol Now Made in America By German Raschig Process

Chemical Important in Manufacture of Explosives And Plastics Yields a Minimum of By-Products

See Front Cover

SYNTHETIC phenol, needed in manufacture of plastics and also of some explosives, can now be made in large quantities from air and two common chemicals, benzene and hydrochloric acid, in a new plant just opened in North Tonawanda, N. Y. It assures American manufacturers of an independent and controlled source of the important compound.

Built in the past two years, costing more than \$2,000,000, the plant is housed in several large buildings, with towers and distillation units connected by forty miles of pipe. Three miles of the piping is made of glass porcelain or rubber, to withstand the corrosive action of hot acids. Its capacity is 15,000,000 pounds of phenol per year. Yet the most modern control methods are employed, so that only six men and a supervisor are required for its operation.

The new plant is part of Durez Plastics and Chemicals, Inc. It uses the so-called Raschig process of phenol manufacture, which was invented in 1930 by Dr. W. Prahl and Dr. William Mathes, of the Raschig G. m. b. H., Ludwigshafen a/Rh., Germany. The Durez firm owns the exclusive United States rights to the process.

Though quite complicated, the Raschig process has two important advantages over older methods for the preparation of phenol, which is another name for carbolic acid. Its product is of high purity, considerably greater even than that approved for medical use. Unlike older methods, which yield at least several pounds of by-product for each pound of phenol, this gives less than a tenth of a pound of by-product for each pound of the desired chemical.

The process has two main stages. In the first, a vapor mixture of benzene, hydrochloric acid and air is converted to mono-chlor-benzene. In the second stage, this is mixed with steam which is converted into phenol and hydrochloric acid. The latter can then be used over again with a new batch of benzene. Also, the catalysts, materials which themselves are

not changed, but which make certain of the reactions possible, are used many times.

In 1921, only 2,000,000 pounds of synthetic resins were produced, compared with more than 200,000,000 pounds last year. Those made from phenol have had the fastest growth and were the first to be made on a mass production basis it is said. Cameras, radios, brake linings, binders for plywood, telephones, paints and adding machines are a few of the common articles now made from them.

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From Page 275

protoplasmic mass. The protoplasm streams in one direction for about 50 seconds, then reverses itself and streams back again. There seem to be several rhythms at work, but the 50-second one rules the dance.

The slime-mold moves from place to place by the very simple device of flowing forward a little farther each time, and not retreating all the way to its original position when it reverses. It is like the traditional penitential march of ancient pilgrims going to Jerusalem—three steps forward and two steps back.

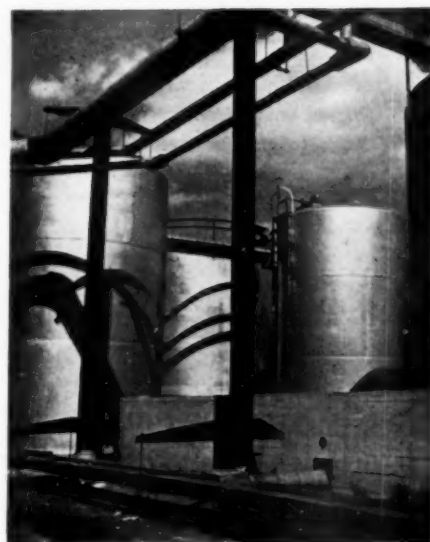
Measurement of the force involved in the streaming was accomplished by caging a single strand of the slime-mold in a divided chamber, and applying pressure to one half of it, while the other half was left free. The pressure that will just stop the flow is considered a measure of its force. This proves to be the equivalent of a column of water 25 centimeters high.

Science News Letter, November 2, 1940

Dance of Four Stars

A STRANGE and intricate dance of four stars with the shortest part of the rhythm only a week long and the longest a million years, was described before the National Academy by Dr. Peter van de Kamp and Miss Janet M. deVilbiss of Swarthmore College.

Part of the circling star group has long been known. It is one of the visible stars in the constellation Corona Borealis, the



STORAGE TANKS

After synthetic phenol is made in the new Durez plant it is stored in these huge tanks prior to its use in making plastics.

northern crown, and has been considered a double star.

However, it now proves that one member of the double star is itself a double, with the two bodies quite close together and revolving around each other once in eight days. At a greater distance is another member, with a rotational period of about 1200 years. Finally comes the newly discovered fourth partner, a star too faint to be visible to the naked eye, and so distant from the rest of the system that its membership therein is traceable only by its apparent path, which would sweep it around the other three once in a million years.

Science News Letter, November 2, 1940

Diving Animals Studied

STUDIES on the physiology of diving seals, porpoises and manatees or sea-cows were reported to the Academy by Dr. Laurence Irving and associates, of Swarthmore College. They made their studies largely on animals in the great tanks at Marineland, Fla.

As soon as a seal dives, they found, its heart-beat drops to about a tenth of the normal rate. The hearts of porpoises and manatees, however, slowed down by only about one-half. On emergence, normal rates are restored.

Oxygen in the arterial blood is steadily exhausted during a dive, and when it reaches a minimum point the animal of course has to come up for air. Oxygen in

the muscles vanishes within five minutes, but is restored quickly in recovery. Blood flow in the muscles diminishes markedly during the dive, but apparently the brain's supply of blood is not diminished. Apparently the muscles get along without new oxygen during the diving pe-

riod, burning part of their substance down to lactic acid, which rapidly passes into the blood as soon as the animal emerges and begins breathing air again.

Associated with Dr. Laurence in the research were Dr. P. F. Scholander and Dr. S. W. Grinnell.

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showing these relations in various kinds of steel. This information, it is expected, will prove useful in making possible a more accurately controlled degree of hardening of steel in various uses.

Science News Letter, November 2, 1940

Stronger Stainless Steels

ABILITY of stainless steel used in airplanes to absorb vibrations, such as those from the engines, is less the stronger it is. This was reported by R. M. Brick and Arthur Phillips, of the Hammond Laboratory of Yale University, to the meeting.

However, both aluminum and stainless steel have their respective advantages, and the experimenters drew no conclusions as to whether or not one might supplant the other. They were concerned both with the fatigue of a metal, that is, the number of times it can be bent; and the damping, or vibration-absorbing power. The latter is very important in an airplane, because, unlike machinery on the ground, there is no foundation to absorb the vibration. This must be done by the structure of the airplane itself.

Surface effect, they find, is a considerable factor. Some types of aluminum alloy develop surface cracks under heavy vibration. Stainless steel, also, may have its fatigue strength impaired by surface effects. They point out that a finely polished surface, free from any channels made by the acid used in the final stages of manufacture, is important.

Science News Letter, November 2, 1940

Chafing Affects Strength

CHAFING between metal machinery parts, often neglected in past tests of metal parts, is an important factor in constructing airplanes and other kinds of machinery, Dr. George Sachs, assistant professor of metallurgy, and Peter Stefan, research assistant, at the Case School of Applied Science told the American Society for Metals.

The rubbing action between two closely fitted machine parts, they said, adds greatly to the total stress to which they are subjected. Examples are found in press fits, axle seats, propeller hubs and other important machine assemblies. If chafing is not considered, a simple test under static conditions of the material used may give a false idea of its strength. Even if a part's normal strength under continued stress seems ample, the

METALLURGY

Grain Size Affects Degree to Which Steel Can Be Hardened

Even Among Steels of Similar Chemical Composition, Larger Grains Are Found To Give Harder Metal

NEW studies of the factors which affect the degree to which steel can be hardened, important in preparing steel for armor and munitions, as well as for many industrial uses, were described to the American Society for Metals, meeting in connection with the National Metal Congress and Exposition in Cleveland. These researches were made by Dr. M. A. Grossman, director of research, and R. L. Stephenson, metallurgist, of the Carnegie-Illinois Steel Corporation.

The chemical composition of a steel has a lot to do with the extent to which

it can be hardened, but it has been found that even those of similar composition may have different hardenabilities. This is determined by the size of the grains of which it is formed.

In their researches, Dr. Grossman and Mr. Stephenson found that larger grains gave a harder steel. They stated also "that the greater the hardenability of the steel, due to its chemical composition, the more was the hardenability affected by a change in grain size." The hardenability can be increased as much as 50% by changing grain size.

They presented to the meeting tables



RESPONSIBLE

These three men were responsible for the design and erection of the new Durez synthetic phenol plant. They are G. M. Loomis, R. M. Crawford and Dr. W. Prahl. The latter, while connected with the Raschig company in Germany, was one of the original inventors of the process.

chafing effect may mean that it is worked close to or even beyond its safe limit.

The metallurgists find that under these conditions cast steels and alloys of aluminum may really be superior to wrought metal parts, even though in ordinary testing the latter show greater resistance to fatigue.

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Bombardment for Strength

INCREASED strength of steel parts of airplane motors by bombardment with tiny hard steel balls and so hammering the surface into an extremely hard and smooth finish was promised by F. P. Zimmerli, chief engineer of the Barnes-Gibson-Raymond division of Associated Spring Corporation.

The process is called "shot blasting," and has been used for some years on automobile springs, greatly increasing their life. Springs which used to fail after 50,000 bends now are made to function more than a million and a half times without breaking. Not only does this make better springs, but the steel which might have been needed for replacements is saved for other important uses.

Mr. Zimmerli stated that he saw no reason why connecting rods and other airplane motor parts which operate under heavy stress could not be shot blasted instead of being ground and polished all over. This, he indicated, would give increased strength and also, perhaps, make possible the use of less steel in their manufacture. Aluminum alloys, phosphor bronze, nickel steel, and other ferrous alloys can also be adapted to the process, he stated.

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When *eelgrass* along the Atlantic coasts died out swiftly and almost completely for unknown reasons about 10 years ago, the migratory waterfowl called *brant* also were nearly wiped out, because this grass is their favorite food.

● RADIO

Dr. George B. Watkins, director of research of Libbey-Owens-Ford Glass Co. will talk on the "Modern Automobile's Invisible Wall of Safety" as guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, Nov. 7, 3:45 p.m. EST, 2:45 CST, 1:45 MST, 12:45 PST.

Listen in on your local station. Listen in each Thursday.

MEDICINE

Seven-Fold Medical Exam Awaits Draftees for Army

NO, YOUNG fellow, you're not in the Army yet. Even after your number comes up, you'll still have a seven-fold screening of medical tests to go through, before you're considered a worthy recipient of one of those nice, new Garand rifles. It takes a healthy man to be a soldier.

Here are the medical steps that must be climbed by those called for service. They are outlined in the *Journal of the American Medical Association* (Oct. 19):

1. Examination of urine, and when required, of sputum and other body fluids.
2. Blood test for syphilis.
3. Eye-ear-nose-throat and dental examinations.
4. Measurements of height, weight, chest; examination of feet, bones and joints.
5. General surgical examination.
6. Examination of heart and lungs.
7. Neuropsychiatric examination, to

weed out the obviously unfit from mental and emotional standpoints.

After these more or less routine examinations, there may still be X-ray, laboratory and other check-ups on individuals who seem to be special cases.

These examinations, the *Journal* states, will be made after draftees have been certified by their local boards and sent on to the medical induction boards.

These boards will serve in connection with the induction stations, where draftees report for assignment to duty. Induction stations will do the same work for the new army that enlistment stations perform for the volunteer service.

Specialists volunteering for the service will make up the medical induction boards. Each board will consist of three internists, one general surgeon, one foot specialist, two eye specialists, one ear-nose-throat specialist, one neuropsychiatrist, one clinical pathologist and one dentist.

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MEDICINE

Heart Disease More Frequent Among Tobacco Smokers

HEART DISEASE occurs more often among tobacco smokers than among non-smokers under 50 years old, though smoking may not necessarily be a cause of heart disease, Dr. John P. English, Dr. Frederick A. Willius and Dr. Joseph Berkson, of the Mayo Clinic and Foundation, announce as a result of a study of several thousand smokers, non-smokers, and patients with and without heart disease.

Without assuming that tobacco smoking is a cause of heart disease, the Mayo Clinic physicians, in a report to the American Medical Association, suggest the possibility that smoking is "a precipitating influence in the earlier development of coronary disease."

"It is perfectly true," Dr. Willius agrees with other physicians, "that many other factors enter into the problem—heredity, our manner of doing things, temperament and so on."

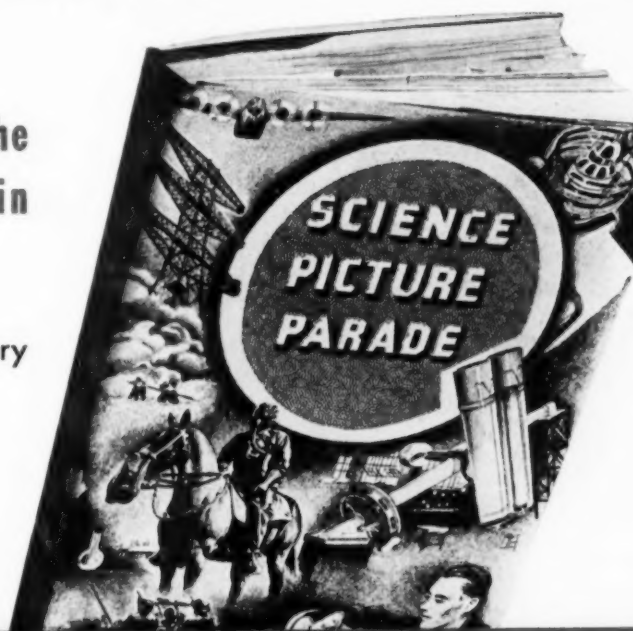
Among 1,000 patients with heart disease there were 698 smokers, contrasted with 663 smokers among 1,000 persons without heart disease. Among 187 heart disease patients between the ages of 40 and 49 years there were 149 smokers, contrasted with 187 smokers among 302 persons between 40 and 49 years who had no heart disease.

The smoking of tobacco, the physicians comment, probably has a more profound effect on younger persons, owing to the existence of relatively normal heart and blood vessels, influencing perhaps the earlier development of heart disease. In the older age groups in which artery changes are prominent regardless of outside influences such as smoking, the possible harmful effects of tobacco smoke are less evident than the other factors concerned in the production of artery disease.

Science News Letter, November 2, 1940

A remarkable new book that reviews the great achievements of recent years in every field of science

Inventions, experiments, discoveries — every human stride over the obstacles in the path of progress — pass in colorful, swift review in this exciting book by Watson Davis.



SCIENCE PICTURE PARADE

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THE PARADE

SCIENCE PICTURE PARADE has been conceived in terms of basic fields of science, one chapter devoted to each field. The technique of presentation is a combination of text and photographs in such balance—40,000 words and 302 extraordinary reproductions—as to produce a result which is neither a picture-book nor a book with pictures. The illustrations are graphic examples of the text, and the text is thorough and scientific. The only truly descriptive word is *parade*. Here are the divisions (chapters) of the parade and fragmental glimpses of the word-and-picture marchers:

ANIMALS—panda, koala, tarsier, white bison, aard-vark, two-headed trout, paramecium . . .

ARCHAEOLOGY—Folsom Man, low-browed King Ashurnasir-apal of Assyria, high-hatted Pharaoh Merenptah of Egypt, a Mayan calendar-image from Tuxtla . . .

ATOMS—cyclotrons, split atoms of uranium, cosmic rays . . .

AVIATION—bombers for war, clippers for peace, autogiros, wind tunnels . . .

BIRDS—dodos, tame eagles, left-handed parrots, emperor penguins, apartment size turkeys.

CHEMISTRY—nylon, glass fabrics, acrylic resin, propane, deuterium . . .

EARTH—fertile lava, a canyon from a plow furrow, resources for war, earth's record of age . . .

ELECTRICITY—artificial lightning, giant generators, power for the people, electricity-into-sound, voice of Voder . . .

HEALTH—life-saving sulfanilamide, vitamins and more vitamins, rescue for the "living dead" . . .

INDUSTRY—new processes, new inventions, new uses, arms for defence . . .

INSECTS—cicada in flight, mantis at prayer? Insect Enemy No. 1: Mosquito . . .

LIGHT—cigarette-sized arc lamp, a man loses his shadow, lamps that kill germs, lamps that make meat tender, golf swing taken apart . . .

MIND—"candid" picture of a brain, curious human behavior, "ascent of man" . . .

PLANTS—colchicine's marigolds, X-ray of a lily, soilless gardens . . .

RADIO—FM, cardioid directional microphone, radio facsimile, coaxial cable, television in the air . . .

STARS—supernovae, sun spots, giant of Palomar . . .

TRANSPORT—streets of tomorrow, ancient center-line, America's propeller, "pendulum" railroad cars, rockets . . .

WAR—gas, guns, lathes, mortars, bombs, anti-aircraft, Airacuda, tactics . . .

WEATHER—drought, flood, snow crystals, lightning, air-mass analysis . . .

FUTURE—power from sun and atom, synthetic diamonds, more chemotherapy, man getting along with man.

THE AUTHOR

All the news of all the fields of science passes through the hands of Watson Davis, Editor of SCIENCE NEWS LETTER and director of Science Service, the world's only science news syndicate. Author of *The Advance of Science* and *The Story of Copper*, Mr. Davis holds an unequalled position for the survey of scientific progress.

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MEDICINE

"Soldier's Heart" Cured By Cutting Nerves to Gland

A NERVE - CUTTING operation for "soldier's heart" which was successful in 119 out of 127 cases was announced by Brig. Gen. George Crile and Dr. E. P. McCullagh, of the Cleveland Clinic, at the meeting of the Association of Military Surgeons of the United States in Cleveland.

"Soldier's heart" was seen frequently in the military forces during the World War and often occurs in civil life as well. It gets its name from one of the symptoms, palpitation or rapid heart beat.

"It is not only the impact of battle that produces soldier's heart," Gen. Crile said, "the state of struggle, the atmosphere of competition, that surrounds and drives civilized man in his daily

life may produce neurocirculatory asthenia (soldier's heart). The type of individual subject to this disease may be compared with finest type of machine such as a watch, whose delicate movement is most easily distracted."

In the operation, which he said is "dramatically successful," the surgeon cuts either the sympathetic nerves to the adrenal glands or the celiac ganglion in the sympathetic nervous system.

The operation produces its curative results, Gen. Crile believes, by breaking the circuit of the energy-controlling system which "is the only mechanism by which the emotions are expressed, by which fight and flight are executed."

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vascular (heart and artery) examinations. We are often chided about our rigid eye examinations that require pilots to be able 'to see around corners.' It is much more important that the pilot should live to see the next landing field. We must recognize that we are training men who must be able to stand the heavy pressure of flight duty. We cannot expect such endurance in the presence of cardiovascular disease."

The new three-way test of heart fitness advised by Dr. Bartlett and Dr. Carter involves the use of the familiar electrocardiograms and of two new techniques, stethography and cardioscopy.

Electrocardiograms are records in the form of wavy lines on paper of the electric currents accompanying heart activity. With cardioscopy, the physician does not have to wait for a record on paper of heart activity but can look at the message from the heart as it is being sent. If he sees signs of heart damage, he can have a permanent record made of it.

With stethography, the heart "speaks for itself," giving a sound track record of its condition. Sound waves made by the heart as it beats are thus recorded so the physician can tell whether the heart tones are normal or whether there are murmurs indicating heart damage.

Synchronized electric and sound wave messages give much more information about the heart's condition than either one alone, Drs. Bartlett and Carter find. The sound record was essential for diagnosis of one-fifth of the cases reported, detecting early heart disease that would not have been discovered in otherwise thorough heart examinations.

Science News Letter, November 2, 1940

PHYSIOLOGY—AERONAUTICS

New Three-Way Heart Test Urged for Military Pilots

CIVILIAN and military pilots and the young men about to train for defense service in America's expanding air forces should have the benefit of a new and highly efficient triple test for unsuspected heart disease, members of the Aero Medical Association were told at their meeting in Memphis.

Use of the new test detects 20% more cases of heart disease than would be found by the usual physical examination, Dr. Walter Merritt Bartlett, of Benton Harbor, Mich., and Dr. J. Bailey Carter, of Chicago, stated on the basis of their experience with the test in more than

500 patients and routine examinations of 200 civilian pilots.

Recent deaths of two young pilots, who suffered heart attacks in mid-flight and were barely able to land their planes before dying, emphasizes the need of more thorough examination of the pilot's heart, Dr. Carter pointed out. The ages of these two victims of unsuspected heart disease, 27 years and 34 years respectively, shows that serious heart damage is not confined to middle and old age.

"We, as examiners of pilots," Dr. Bartlett declared, "should place more emphasis on the thoroughness of our cardio-

Faster Flights Foreseen

FASTER, more comfortable trans-oceanic flights over greater distances, made possible by the successful development of high altitude flying, would soon be under way if it were not for war. This war-conditioned forecast of the

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future of stratosphere flying was made by D. W. Tomlinson, vice president in charge of engineering, of Transcontinental and Western Air, Inc.

"The era of high altitude flying is definitely here," Mr. Tomlinson declared. "It brings us greater safety and greater comfort. Except for the unfortunate world conditions now existing, this development would without a doubt bring all nations much closer together by increasing the speed and comfort of transoceanic flying over greater distances."

At altitudes of 16,000 to 20,000 feet planes fly 95% under clear skies, Mr. Tomlinson reported.

Protection against lack of oxygen at these altitudes is accomplished by supercharging which keeps atmospheric conditions in the cabins of stratoliners flying at 15,000 feet the same as they would be at the 8,000 feet altitudes of ordinary flying. Above 15,000 feet, and even at 20,000 feet altitude, the cabin altitude is kept to about 12,000 feet by supercharging.

Science News Letter, November 2, 1940

MEDICINE

Avoid Operations in Spring Is Advice to Surgeons

AVOID surgical operations in late winter and spring, if possible, Prof. William F. Petersen, of the University of Illinois College of Medicine, warned members of the American College of Surgeons.

The patient's resistance varies with the season, Prof. Petersen explained.

"If you will examine your hospital records," he said, "you will find that post-operative complications—shock, vascular accidents, infection—occur more often in the late winter and spring. It is at this season that we are more often called upon to operate upon patients, because individuals are more often acutely ill. Avoiding unnecessary or interval operative intervention during this precarious season will help in lowering postoperative infection."

Chilling is also a danger, even if apparently insignificant, Prof. Petersen also warned, because it lowers the resistance to the passage of germs present on mucous membranes. The anesthetic itself entails heat loss from the body, he pointed out. A patient whose skin is covered with moist perspiration when exposed to even a minor draft is subject to undue heat loss.

Science News Letter, November 2, 1940



War and Wildlife

WAR is having its effects on wildlife in Switzerland, sometimes in curiously roundabout and indirect ways.

Deer, for example, have been growing too numerous, especially in the Canton of Grisons. They had been receiving the benefit of special protection and a restricted season before the beginning of hostilities, so that their number was already on the increase. Falling off in the number of hunters from foreign lands gave them further opportunities to build up their numbers, until now they are approaching nuisance proportions. They have been raiding farmers' grain fields, and the bucks are injuring young trees by rubbing their antlers against them, to get rid of the "velvet."

It is rather generally agreed that the number of deer should be reduced, but thus far no clear course of action, safe for the longtime wildlife interests of the country, has suggested itself.

Shortening of the hunting season for chamoix, reduction in number of hunters, and bad weather during the days when hunting was permitted, cut last year's kill of these interesting animals to about a fourth of the average of the past few years. Since there are probably not more than 13,000 chamoix surviving in all Switzerland, this respite is welcomed by conservationists.

There has also been a great reduction in the kill of small game, like rabbits, marmots and foxes, as well as in that of ducks and other wildfowl.

This combination of war and natural causes may be building up an unreckoned food reserve for Switzerland. In Germany, during the first World War, the killing of game ceased to be a sport and became instead a seriously scheduled part of the meat supply program. Even

if Switzerland does not become involved in hostilities, difficulty in importing supplies may make something of the kind desirable there.

Science News Letter, November 2, 1940

MEDICINE

Hearts That Beat as One May Stop the Same Way

"TWO hearts that beat as one" may be only a poet's fancy, but a scientist has just discovered that if the two hearts belonged to husband and wife, even though they do not really beat as one, they are likely to stop beating at the same age and even from the same cause.

Husbands and wives tend to have the same length of life or vitality and when one of them dies of cancer, heart disease, tuberculosis, influenza or pneumonia, the other is more likely to die of the same disease than could be accounted for by mere chance, Dr. Antonio Ciocco, of the U. S. National Institute of Health, reports to the National Academy of Sciences.

Death records of 2,571 married couples who died in Washington County, Maryland, between 1898 and 1938 revealed these surprising findings.

Tendency for both mates to die from the same cause when one of them dies from influenza and pneumonia, cancer or heart disease has apparently never before been recognized.

Being subjected to the same environment and living conditions and a tendency to select a husband or wife of the same constitutional type as oneself may be the reason or reasons why husbands and wives live about the same life span and die from the same one of five diseases which kills one of the couple. Tendency of both husband and wife to die from cancer cannot be explained on the basis of contagion, which might conceivably explain why both would die of tuberculosis, influenza and pneumonia if one of them died of such a germ-caused disease. Marital contagion might even be a factor in the case of heart disease if rheumatic heart disease is definitely shown to be infectious, Dr. Ciocco points out.

Search for the reason for such similarity in length of life and cause of death in married couples may shed new light on the action of environment and heredity on conditions such as heart disease and cancer about the causes of which so little is yet known.

Science News Letter, November 2, 1940

•First Glances at New Books

GENERAL SCIENCE

THE READERS DIGEST READER—Selected by Theodore Roosevelt and the Staff of the Reader's Digest—*Doubleday, Doran*, 495 p., \$3. In these 140 articles selected from the 18-year file of the Reader's Digest, those who like to read about science will find a good deal to interest them. SCIENCE NEWS LETTER is represented by "Minnesota's Mysterious Norsemen" by Emily Davis.

Science News Letter, November 2, 1940

ANTHROPOLOGY

MULTIPLE HUMAN BIRTH, TWINS, Triplets, Quadruplets and Quintuplets—Horatio Hackett Newman — *Doubleday, Doran*, 214 p., illus., \$2.50. See page 280.

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ENGINEERING

SIMPLE BLUEPRINT READING—*Lincoln Electric Co.*, 138 p., illus., 50c. Though intended for welders especially, the fundamental principles of blueprint reading are given so clearly in this book that it should be of value for any beginner in the field of mechanical construction.

Science News Letter, November 2, 1940

PHYSICS

SOUND, A Physical Text-book (3d ed.)—E. G. Richardson—*Longmans, Green*, 339 p., \$5.25. In the first edition of this work (1927) a special effort was made, and very successfully, to cover the technical aspects of the science of sound and acoustics as it related to such modern developments as broadcasting. Now the third edition appears, and newer results are included.

Science News Letter, November 2, 1940

AERONAUTICS

LET'S FLY, An ABC of Flying—Ernest G. Vetter—*Morrow*, 116 p., illus., \$1.50. Though admitting that no book can actually teach one to fly an airplane, this little book takes the reader in imagination through the adventures of a course in flight training. After reading it, one will have a hard time resisting the urge to try, however.

Science News Letter, November 2, 1940

CHEMISTRY

CHEMISTRY, A Textbook for Colleges—William McPherson, William Edwards Henderson, W. Conard Fernelius and Edward Mack, Jr.—*Ginn*, 765 p., illus., \$3.75. This latest addition to the McPherson and Henderson series of chemistry texts fully justifies their splendid reputation for accuracy and interest. Modern applications of chemistry, in the field of plastics, synthetic rubber, petroleum refining, etc., are covered. Somewhat more organic chemistry is included than usually, for, as the authors state, "relatively few students go beyond their first year in chemistry and most of the materials that attract their attention in daily life are organic materials."

Science News Letter, November 2, 1940

GENERAL SCIENCE

HENLEY'S TWENTIETH CENTURY BOOK OF FORMULAS, PROCESSES AND TRADE SECRETS (Rev. and Enl.)—Edited by Gardner D. Hiscox; Revised and Enlarged by T. O'Connor Sloane—*Henley*, 857 p., \$4. An old standby brought up to date.

Science News Letter, November 2, 1940

GEOGRAPHY—ECONOMICS

ECONOMIC GEOGRAPHY OF SOUTH AMERICA (3rd. ed.)—R. H. Whitbeck, Frank E. Williams and William F. Christians—*McGraw-Hill*, 469 p., illus., \$3.50. This text answers many questions people are asking about South American commerce, industries, resources, and economic problems. It is described as "more than a revision," so much has it been rewritten and renewed.

Science News Letter, November 2, 1940

ARCHAEOLOGY

THE SU SITE; Excavations at a Mogollon Village, Western New Mexico, 1939—Paul S. Martin, John Rinaldo and Marjorie Kelley—*Field Museum of Natural History*, 97 p., illus., maps, \$1.50. A village of round pithouses, a variety of pottery with two new types included, rather simple bone and stone artifacts, and burials of 26 individuals are described, adding to understanding of the little-known Mogollon Indian culture of the ancient Southwest.

Science News Letter, November 2, 1940

ENGINEERING

BOUNDARY PROBLEMS AND DEVELOPMENT PROJECTS, Pitfalls and How to Avoid Them—D. G. W. Ricketts—*Pelican Pub. Co.*, 131 p., 140 pl., \$4. Many a legal squabble has involved the boundary of a tract of land. This work should be very useful to the engineer, as well as to lawyers, real estate men, etc., in helping them to avoid many of the pitfalls.

Science News Letter, November 2, 1940

POPULATION

POPULATION, Policies and Movements in Europe—D. V. Glass—*Oxford Univ. Press*, 490 p., \$6. As a background for planning population policy, the author here summarizes the work he has done in recent years as research secretary of the British organization, the Population Investigation Committee. England, he points out, may be faced with a population considerably reduced by war casualties. Inevitably, all Europe will face new population problems. Here is help in meeting these problems.

Science News Letter, November 2, 1940

LANGUAGE

AGENTIVE AND CAUSATIVE ELEMENTS IN NAVAJO—Gladys A. Reichard and Adolph Dodge Bittany—*Augustin*, 22 p., \$1.

Science News Letter, November 2, 1940

SOCIOLOGY

CHILDREN OF BONDAGE — Allison Davis and John Dollard—*Amer. Council on Education*, 299 p., \$2.25. Following an introductory volume "In a Minor Key," this study becomes the first in a series on major issues affecting welfare and education of Negro youth in America. Taking two cities of the deep South, this volume tells with much vivid detail how Negro personality is shaped by caste and also by the class and clique into which the child is born. No attempt at solving problems is made, but clearer understanding of facts is regarded as a step toward solution.

Science News Letter, November 2, 1940

SOCIOLOGY

NEGRO YOUTH AT THE CROSSWAYS, Their Personality Development in the Middle States—E. Franklin Frazier—*Amer. Council on Education*, 301 p., \$2.25. Second in the series of the Negro Youth Survey's regional studies sponsored by the American Council on Education. About a million Negroes live in the "crossways," or border region between the Old South and Yankee North. To learn special psychological and social problems of Negro young people in this area, Dr. Frazier went to Louisville, Ky., and Washington, D. C., interviewing many boys and girls and parents.

Science News Letter, November 2, 1940

SPORT

SPORT FOR THE FUN OF IT—John R. Tunis—*Barnes*, 340 p., illus., \$2.50.

Science News Letter, November 2, 1940